

FINANCIAL STATEMENTS RISK: CASE STUDY OF A SMALL ACCOUNTING UNIT

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Abstract: *Accounting records constitute the basic information sources for various groups of users. The quality of information acquired may considerably affect their decision-making based on accounting data and information reported. The focus of this contribution is laid on the CFEBT method of risk detection of accounting records from the view of a risk of accounting errors and frauds, with a result in the reduction in the information asymmetry between their authors and users. The main article objective is to analyze the risk of accounting errors and frauds through CFEBT risk triangle and a case study of selected small entities which operate predominantly in processing industry. The CFEBT risk triangle was designed as a tool for detection, evaluation and management of the risk of accounting errors and frauds in circumstances of the Czech accounting standards and International Financial Reporting Standards (IFRS). The case study results that it was ascertained that the most significant discrepancy between the economic substance of the business activity of the accounting unit and the generation of cash flow is a consequence of reported financial revenues.*

Keywords: *Creative Accounting, CFEBT, Financial Statements, Risk of Financial Statements, Fair and True View, Frauds, Accounting Errors.*

JEL Classification: *G32, M41.*

Introduction

Financial statements have been a major concern for the regulators due their importance for financial fraud detection tools and capabilities that may provide stakeholders and other involved people's red flags. However history shows that financial fraud can never be confirmed without a full investigation (Bay, Kumaraswamy, Anderle, Kumar & Steier (2006). According to Abbasi (2012) over the past decades several frauds have been uncovered, for example Enron, WorldCom, Lehman Brothers, General Motors (USA), Harris Scarfe and HIH (Australia), Vivendi (France), Royal Ahold (the Netherlands), SKGlobal (Korea), YGX (China), Liverdoor Co. (Japan) etc. In this connection, Henselmann and Hofmann (2010) list the worst ten financial scandals in the last years. The Association of Certified Fraud Examiners estimates that worldwide financial losses exceed a trillion dollars. Needless to say, traditional methods of uncovering frauds and risks thereof have increasingly failed. This is also proven by the fact that frauds are uncovered in only a half of all cases (42%) outside the internal control systems of companies. Whereas only a small percentage of loss from frauds is attributable to organizations, a higher percentage is achieved in this sense by senior officers and managerial staff. Organizations may accordingly lose as many as 7% of their total turnover per year as a consequence of frauds (Chartered Institute of Management Accountants 2009). After the global financial crisis banks and politics around the world promoted new rules and regulations to enhance the transparency of financial system. The question is to what extents reduce these institutions the risk of fraud. Companies are also confronted with the task of implementing information technologies in forensic activities, improvement of internal information systems by

introducing effective internal controls based on mutual links in the financial and managerial accounting.

The paper focused on the issue of manipulation of accounting records, which is the main area of creative accounting. The CFEBT triangle method analysis will show a case study of small accounting units where it is possible to reduce information asymmetry between authors and users of the financial statements.

1 Statement of a problem

Accounting report fraud is also a very problematic kind of fraud which affects many organizations around the world (Cantoni & Xiang, 2013). The first fraudulent misstatement comes about as a result of fraudulent financial reporting and this involves the intentional misstatements or omissions to disclosure facts in the financial statements in order to deceive and mislead those using the financial statement. The next kind of misstatements comes about as a result of misappropriating assets, and these can include theft or even defalcation (Clarke, 2007). Both these misstatements generally result in financial reporting fraud that is very detrimental to any organization (Adner & Helfat, 2003). All kinds of financial fraud are said that be a very significant problem for many business organizations all around the world (Adner & Helfat, 2003). There are many examples of large multinational companies which have been found to either practice fraud or have become the victim of fraud, and suffering very bad consequences as a result (Masdoor, 2011). Financial fraud is a species of fraud that is very destructive to an organization and it is capable of bringing the organization to its knees (Adner & Helfat, 2003). Without proper defence mechanisms, a banking and finance organization would not be able to guard against financial fraud and suffer the consequences of it (Clarke, 2007). Many large international companies around the world are greatly dependent on the ability to control their financial performance measures (Eccles & Youmans, 2015). Companies that are unable to do so would eventually fall victim to financial reporting (Gallagher & Blank, 2012).

Reduced information asymmetry for users of accounting records may have significant impacts on their decision-making. The publication recommends a preventive detection of accounting errors, including uncovering the causes thereof (Wuerger and Borba, 2014). Specific recommendations for the management to introduce internal auditing and set up different organizational internal controls for preventing frauds of financial statements were published as a result of a case study conducted in a construction company and construction industry (Horvat & Lipicnik, 2016). A proposal for a method for determining the probability of veracity of financial statements as a tool for distinguishing between fraudulent and truthful reports was published by authors Purda and Skillicorn (Purda and Skillicorn, 2015). Moreover, manipulation of accounting is rooted in attempts at tax evasion or money laundering. Results of frauds in the area of export are presented within the “Deep Learning” model, which classifies Brazilian producers as regards the options of committing frauds during export activities. According to the publication, this model was able to uncover certain anomalies, such as money laundering (Paula et al., 2016). The problem of financial statements risk is associated with the terms “creative accounting” and “fraud”. The term of “creative accounting” is defined in theory as a process during which economic transactions are realized directly in order to achieve favourable accounting results or, more often, this term concerns a purpose-directed manipulation of

data. Users of financial statements are unable to obtain absolute certainty about faithful presentation (true and fair view) of financial statements in the relation of economy reality. This means they need reasonable certainty. At the same time creators and users of financial statements want to get the best quality and quantity of information. They could use a wide range of ratios, bankruptcy and credibility models. But these models often provide users with conflicting results and this complicates decisions about the financial health of a company and so on.

2 Material and Methods

The objective of the paper is analysis of manipulation of accounting records using the CFEBT triangle method on the case study of small accounting units. The method of CFEBT represents a solution to the issue of reducing the information asymmetry between authors and users of financial statements.

2.1 Data

The analysis was engaged in certain tested periods for selected accounting units in the range of available data of seven accounting periods, i.e. accounting periods of the years 2005–2016. The selected sample is made up of accounting units of small entities, depending on the average number of their employees, which is greater than 10 and does not exceed 50. The accounting units operate predominantly in processing industry. In total, as many as 6,299 accounting units were included in the analysis. All selected companies are seated in the Czech Republic. The analysis works with reported data of financial statements of companies from Albertina database. Where it tests risks of causes (motivation) of occurrence of accounting errors and frauds, the analysis operates with as many as 26,884 under test (data rows) or 6,299 accounting units for the analysed accounting periods of selected accounting units in order to calculate seven selected financial indicators, median value, frequency of occurrence in the set, and consequently, the calculation of a deviation from the median value and the standard deviation and the proportion of a deviation to the standard deviation.

The table below reflects in detail the representation of individual groups of industries for the selected sample of accounting units under comparison, included in the test. Where the representation of certain groups of NACE industries is insignificant, these groups were combined into suitable joint groups.

Tab. 1: Characteristics of data sample according to CZ NACE

CZ NACE number	Description of CZ NACE groups branches of processing industry	Number of accounting units		Number of enterprises	
		%	Number	%	Number
10-12	Production of food, beverages and tobacco	9.64	2591	10.10	636
13-15	Textile, clothing, leather and shoe production	5.88	1580	5.81	366
16-17, 31	Wood processing and paper production, furniture production	11.19	3009	11.27	710
19-20, 22-23	Manufacture of chemicals and coke, plastics and rubber production and other non-metallic products	12.78	3436	12.78	805
24-25	Metals and metal products, fabricated metal product manufacturing etc.	26.48	7118	26.18	1649
26-27	Electrical machinery and optical equipment production including computer and electrical equipment	8.14	2188	7.99	503
28-30	Manufacture of machinery and equipment and transport equipment production	12.09	3251	12.05	759
8,18,21,32,33	Other manufacturing	13.81	3711	13.83	871

Source: (Albertina Gold Edition)

2.2 CFEBT risk triangle method

The methodology of CFEBT risk triangle is based on the Beneish model that uses financial statement data in assessing the fraud potential of enterprises. To compute a probability of manipulation (M-score), Beneish (1999) estimated a probit regression. The calculations of CFEBT score is divided into three levels of analysis. The M-score is designed at the first level as an analytical test which is followed by a detailed analysis of non-monetary expenses and revenues in a modified calculation of the second level of the M-score. The third level of the M-score is included to pursuance of a complex overview of all interconnections of generated outputs of cash flow and CFEBT. These levels could be calculated as follows:

$$CFEBT = \frac{\sum_{t=1}^n CF_t - \sum_{t=1}^n EBT_t}{\sum_{t=1}^n EBT_t} \cdot 100 \quad (1)$$

Where:

CF ... Total increase or decrease in cash flow before tax during the observed period *t*

EBT ... Earnings before tax, generated during the observed period

If $CFEBT \geq \text{materiality}$, a detailed test of links of impacts has to follow in the second and third levels of M-score (Drabkova, 2013; 2015).

$$CFEBT_m = \frac{\sum_{t=1}^n CFm_t - \sum_{t=1}^n EBTm_t}{\sum_{t=1}^n EBTm_t} \cdot 100 \quad (2)$$

Where:

CF_m ... Increase in cash flow before tax in the observed period, modified by reported future cash in- and out-flows

EBT_m ... Earnings before tax generated during the observed period, modified by non-monetary expenses

$$CFEBT_{om} = \frac{\sum_{t=1}^n CFom_t - \sum_{t=1}^n EBTmm_t}{\sum_{t=1}^n EBTm_t} \cdot 100 \quad (3)$$

Where

CF_{om} : increase in operative cash flow before taxes in the analysed period

EBT_m : earnings before taxes gained for the analysed period modified by non-monetary expenses

For a statistical analysis of causes of accounting errors and frauds, seven financial indicators are designed for the individual accounting periods. These indicators allow a comparison between cash flow and earnings in terms of accounting, i.e. net of income taxes: return of assets (ROA, cash flow return on assets (CFA), and return of equity (ROE), cash flow return of equity (CFE), expense personnel productivity (EPP), financial personnel productivity (FPP) and total accruals to total assets (TATA).

3 Problem solving

CFEBT risk triangle is based on 3 risk factors in mutual relationships causes and impacts of accounting errors and frauds based on a detailed analysis in combination with assessment of internal control system of accounting unit. The triangle aims to reduce an information asymmetry between creators and users of accounts. It is also able to help to manage risks of accounting errors and frauds for managers and corporate governance.

3.1 CFEBT Risk Triangle – risk of cause for the whole sample of small entities

The analysis of the risk of occurrence (cause) of accounting errors and frauds focused on the frequencies of seven individual indicators which were: ROA, CFA, ROE, CFE, EPP, FPP and TATA. Results are obtained on the whole sample of small entities. On the basis of the determined risk items for the parameter set up for the calculation of 7 financial indicators, (i.e. tolerance = 0, and certainty = 3.5, narrowing = 1 %, and calculation of the median value using the modus, the number of risk items for 7 financial indicators was calculated in the proportion 1%). The next phase of the analysis tested modality in form of calculation of vertices in order to evaluate suitability of using the modus for calculating the median value of the given set. As regards the course of frequencies, the function development was observed, and the issue whether it is possible to identify one significant vertex on the Gaussian curve was examined. The use of modus in order to gain the most accurate calculation of the median value was confirmed.

The following table shows resultant values of frequencies accomplished for individual indicators of the risk of occurrence (cause) of accounting errors and frauds. The above-specified calculations are performed using a statistical method which reveals median values, deviations of data from a median value and the standard deviation. The subsequent

calculation of a ratio (deviation of an accounting value from a calculated median value of a set) and the standard deviation generates information about a risk factor in the sense that values of the analysed data entity deviate from median values of the set of taxable entities. A median value is determined in the framework of the analysis for each item contained in the database of the entities observed for every accounting period included.

Tab. 2: Overview of detected risk items of financial indicators – risk of cause of accounting errors and frauds occurrence in the years 2005–2016

Indicator	ROA	CFA	ROE	CFE	EPP	FPP	TATA
Modus	0	4	0	10	296	6	0
Frequency	2270	1283	1118	1666	3078	1316	1118
Standard deviation	14.48	15.29	48.6	61.04	531.21	66.59	48.6
Number of risk items in set	727	646	998	1033	757	812	631
Proportion of risk items %	3	2	4	4	3	3	2

Source: (own processing)

Tab. 2 above shows the total number of evaluated risk indicators of the financial analysis for individual analysed accounting periods of 2005–2016, in total 26,884 of analysed items (calculations) for as many as 6,299 accounting units. The calculation of 7 selected indicators is also based on the evaluation of cash flow and profit. These are part of the risk analysis of the cause of accounting errors and frauds occurrence in CFEBT risk triangle.

The result of detected risk areas of the financial analysis may be presented as a reflection of the information capacity of the calculated financial health of the accounting unit observed in relation to comparable accounting units. In addition, it is possible to determine whether the given accounting unit deviates from financial indicators and, as the case may be, to determine the areas of financial indicators that are deviated from. The evaluated risk items in the given accounting periods of the selected accounting unit are used in comparison with results of a risk analysis of the impact of accounting errors and frauds. In this part of the anti-fraud CFEBT approach, the three-level calculation of the M-score proceeds from the interconnection of cash flow change (CF) and earnings (EBT), all after the tax aspect has been excluded. We selected one accounting unit from the tested sample for the analysis of the risk of impacts in this paper because selected accounting unit had 1st level of CFEBT score highly above considered materiality. Considered materiality was between 5% - 10%.

3.2 Case study: CFEBT Risk Triangle for the selected small entity

The detection of risk items for individual entities may be followed by a detailed analysis, which examines the impact of these items in a long-term context of relations between financial statements. The selected accounting unit is based in the Czech Republic, and, according to the classification of CZ NACE, the industry in which the accounting unit operates is that with the prevailing activity of NACE 30990: Manufacture of other means of transport and equipment unspecified elsewhere. The turnover of the accounting unit for the last accounting period observed amounted to CZK 29 million and this accounting units has approximately 25 employees. For the period observed, the financial statements of the accounting unit were not verified by auditors.

3.2.1 Three levels of M-score

In the analysis of an impact risk of accounting errors and frauds, the selected unit generated following results of the M-score. Results of M-score were calculated for a selected unit for the accounting period 2011-2015 and Tab. 3 provides cumulative results for individual accounting periods analysed. Tab. 3 implies that the first level of CFEBT M-score is calculated at 547%. The first level of M-Score is calculated according to the equation 1 (see chapter 2.2 methodology). This value, which is highly above the materiality level, expresses a significant inconsistency between the generation of cash flow and earnings before tax for the analysed first to twelfth years in the selected accounting unit. This positive value clarifies that the accounting unit has reached earnings at a significantly lower level in comparison with the generated cash flow.

Tab. 3: CFEBT for the selected accounting unit – three levels of M-score

Analysis into risk of impact of accounting errors ad frauds – 1st - 3rd levels of CFEBT*	First level of M-score	Second level of M-score	Third level of M-score
Taxable entity	Basic	Modified	M-operative
M-score	547	88	-66
Δ CF**	2,787	5,087	909
Σ EBT	431	2,704	2,704

* indicator (1), (2) and (3) in methodology of CFEBT risk triangle

**an increase in cash flow of reviewed accounting periods in thousands

Source: (own processing)

In the detailed testing of the second level of modified M-score, the first level of M-score was reduced to 88% from 547%, see Tab. 3. The second level of M-Score is calculated according to the equation 2 (see chapter 2.2 methodology). However, M-score still shows a value that is higher than the materiality under consideration. In modifying the creation of cash flow and the profit (loss) as to the economic substance of the results reported for the accounting periods observed, cash flow increased by TCZK 2.300, and EBT increased by TCZK 2.273. However, there still remains a considerable discrepancy between cash flow and EBT at 88%.

The third phase of M-score as shown in Tab. 3 presents the calculation of the ratio of generated operating cash flow and EBT after modification by costs not converted to expenses. The third level of M-Score is calculated according to the equation 3 (see chapter 2.2 methodology). The operative M-score equals 66%, with a minus values, where the value of the modified EBT in the amount of TCZK 2,704 exceeded the value of the operating cash flow in the amount of TCZK 909. This means that the decrease in cash flow below the value of the profit earned in total originated in the operational area in 34%, and in 66% outside the operational area, i.e. by financial and investment activities of the accounting unit.

On the basis of results of the first, second and third levels of M-score, interconnections between impacts of EBT and cash flow may be interpreted as inconsistent, with an impact outside of the operations area of the selected company, or, as the case may be, the inconsistency has been caused predominantly in the financial or investment area.

Tab. 4: Modification items of the second level of CFEBT M-score

Item no.**	Description of item (modification, informative, operative)*	Change of item "n" in TCZK	n / EBT in %
4	Receivables -4, trade receivables	-1,355	-314
5	Receivables -5, from institutions	-135	-31
9	Inventory	-221	-51
10	Tangible fixed assets	-1,236	-287
13	Payables to members	-138	-32
16	Trade payables	-350	-81
18	Payables to employees (institutions)	-153	-35
23	Depreciation	2,273	527
33	Equity capital	250	58
34	Total revenues from assets and material	4,905	1,138
35	Total costs of assets and material sold	3,110	722

* EBT and CF non-cash and informative items: changes in values over the reviewed period

** items nos. 1–22 – items for modification of CF_m , nos. 23–25 – items for modification of EBT_m , nos. 26–33 – informative items, nos. 34–35 operative items for calculation of $CFEBT_{mo}$

Source: (own processing)

Tab. 4 shows detailed individual modification and informative items, including their percentage proportion to EBT. This information is important for the final evaluation of the risk of accounting manipulation on the basis of the overall results of the analysis into the risk of causes and impacts of accounting errors and frauds.

The difference between the modified cash flow and EBT on the second level of CFEBT score stands at TCZK 2.383 for the period observed, see Tab. 3. Based on the analysis of modified items presented, Tab. 4 indicates that the positive difference between the creation of cash flow and EBT, when corrected as to their economic substance, was caused in the values reported especially by the decrease in trade receivables by 314%, decrease in stock by 51% and tangible fixed assets by 287%. At the same time, the value of the equity capital increased by TCZK 250, or 58%.

3.2.2 Statistical analysis of the risk of cause within CFEBT risk triangle

To evaluate the **risk of cause** of occurrence within the CFEBT risk triangle, the risk rate of the selected accounting unit (small entity) was assessed in the individual accounting periods. The risk of cause of occurrence was analysed for the selected accounting unit on the basis of the above results of the case study for a sample of small accounting units operating predominantly in building production. A statistical analysis and comparison with the median value of the set were performed for the seven proposed financial indicators and the selected accounting items, with these parameters: tolerance 5%, narrowing 0.5% and certainty 3.5.

In accordance with Tab. 5 and results of the evaluation of the risk of accounting items, risk was detected that exceeds the permitted tolerance of 5% for the change of change in reserves and adjustments and complex deferred expenses. Tab. 5 presents the detected risk of cause of accounting errors and frauds for the position "Net book value of material sold" and the observed accounting periods of the years 2011, 2013, 2014 and 2015. Tab. 5 shows results of the comparison between the accounting unit and the whole

set of small companies. The columns provide data as to the frequency of the occurrence of values at 5% tolerance as well as deviations from this tolerance. Results of risk areas for the evaluation of risks of occurrence and impacts of accounting errors and frauds of the selected accounting entity will direct the user into the evaluated risk areas, with information that the user will be able to use on his/her level of decisions made based on financial statements.

Tab. 5: Overview of detected risk items of financial indicators – risk of cause of accounting errors and frauds occurrence in the years 2005–2016

Financial statements date	Accounting item	Change of accounting item TZCK*	Comparison between accounting unit and the whole set		
			Frequency	Deviation	Dev./Stand. dev.
31.12.2011	Reserves, adjustments and complex deferred expenses	-4		-4	-11.43
31.12.2011	Net book value of material sold in TCZK	4	327	4	3.67
31.12.2013		327	4	3.67	327
31.12.2014		218	5	4.59	218
31.12.2015		327	4	3.67	327

* risk items that were excluded upon narrowing at 3% and tolerance at 5%

Source: (own processing)

In statistical evaluation of the risk in the reported accounting unit “change of accruals”, which includes reserves and adjustments, the vertex of risk of occurrence cause uncovered a significant deviation from the median value of the whole sample of accounting units for the year 2011, where the proportion of the deviation and standard deviation of the analysed set amounted to 11.43% – see Tab. 5.

4 Discussion

We elaborate the results of causes and impacts of accounting errors and frauds in small entity which had 1st level of CFEBT score highly above considered materiality. Only reported data of the selected accounting unit in the given collection of documents are at disposal for the evaluation of internal risks present in accounting units, or rather the 30 red-flag questions. Users of accounting statements have in fact no information about the substance of the generated cash flow from these activities. Needless to say, this is an important value of financial assets reported in financial statements by the accounting unit. Previous research carried out by comparison of the CFEBT approach with results of evaluation of selected bankruptcy models (Drábková, 2015; 2016) and models of detection of risks of manipulation of accounting records (Drábková, 2017) confirmed the efficiency of the complex CFEBT approach, which is based on interconnections between reported accounting information in the context of their economic substance. Despite the efficiency of individual detection models, it may be assumed that the focus of these models is placed on selected techniques of creative accounting and lack in complexity of the development of information reported in time and interconnections.

In the evaluation of the risk of impacts of accounting errors and frauds, the generated cash flow exceeded 6.47-fold the generated EBT, which represents a discrepancy of TCZK 2,356 for the observed period 2011–2015. The second level of M-score evaluated the impacts of discrepancies between EBT and the generation of cash flow on the level of individual items, taking into consideration their significance on EBT – see Tab. no. 2. After modification of non-monetary items, the second level of M-score detected a noteworthy discrepancy between the generated cash flow and EBT on the level of 88%. Accordingly, for the observed period, the second level of modified M-score exposed a significant impact of discrepancies on reducing trade receivables by 314% proportion to EBT – i.e. the value of TCZK 1,355, and reduction of stock by 51% proportion to EBT – i.e. TCZK 221,000, for the observed period of 5 years. In addition, payables were reduced by 81% proportion to EBT – i.e. the value of TCZK 350, for the observed period of 5 years – see Tab. 4.

This discrepancy, exceeding the generated cash flow on three levels of the CFEBT score for the area of risk detection of impacts of accounting errors and frauds, and interfering in the operating cash flow to a considerable extent, was not explained by the reported accounting statements in a satisfactory manner, or, as the case may be, the equity capital was not increased by surcharges of owners or the external capital was not increased by credits and loans provided to the company. The third level of CFEBT M-score of 66% revealed that this discrepancy between the earnings before tax and the generated cash flow occurred in the operating cash flow, specifically in the area of reported valued for the sale of material (i.e. in addition to the revenues from sales of goods) and in the area of financial revenues. The financial revenues reported in the observed period of 2011-2015 represented the proportion to EBT in the amount of 1,184%, whereas the expended financial costs reduced these reported revenues only by 191% proportion to EBT. The accounting unit has no short-term or long-term financial investments in its corporate assets. However, the proportion of the reported revenues for the observed period of 6 years (2011 to 2015) to the value of the short-term financial assets on bank accounts and petty-cash funds amounts to 97% at the date of the financial statements for 2015.

The comparison of the interconnection between causes and impacts of the risk of accounting errors and frauds may lead to the evaluation of the discrepancy between the generation of cash flow and EBT for the observed period of 2011 through 2015 in particular in the operating area of sales of materials and reserves including adjustments, where the links between the reported accounting units were not explained satisfactorily. The accounting unit generated the reported cash flow that significantly deviates from the economic substance of the activity about which the entity provides information to users of financial statements.

Conclusion

The analysis of the risk of accounting errors and frauds examined the operating and financial activities of the accounting unit. In these areas, it was ascertained that the most significant discrepancy between the economic substance of the business activity of the accounting unit and the generation of cash flow is a consequence of reported financial revenues. The operating income reported by the accounting unit reached a significant loss during the individual accounting periods 2011 to 2015. It was exactly for the reason of the

reported profit from sales of material and reported financial revenues that the accounting unit reported the positive earnings before tax in 2014 to 2015 (accounting profit).

Recommendations for individual users of accounting statements can vary subject to the decisions these users intend to make. Auditors, internal or external, and Corporate Governance management may be recommended to direct audit procedures in detailed tests of the generation of reserves and adjustments for the year 2011, and financial revenues, including the related values of bank accounts in the individual years, and last but not least, the area of reporting of revenues and expenses from the sales of materials for 2011, 2013 to 2015. A significant risk of accounting errors and frauds was detected in these accounting areas for the observed period. Potential investors may be recommended to assess their priorities as to the investment into this company with respect to the detected risk of earnings management and off-balance financing, the consequence of which might be the reported values of cash flow and EBT for the observed period of 2011 to 2015. In general, potential investors cannot be recommended to invest into this company despite the fact that bankruptcy or solvency models may yield different information.

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